Algebra - Algebraic Fractions

Q1

(a) Show that the equation

$$\frac{5}{x+2} = \frac{4-3x}{x-1}$$

can be rearranged to give $3x^2 + 7x - 13 = 0$

(3)

(b) Solve $3x^2 + 7x - 13 = 0$
Give your solutions correct to 2 decimal places.

$x =$ ..... or $x =$ .....

(3)

Q2

Simplify fully $\dfrac{x^2+x-6}{x^2-7x+10}$

.....

(Total 3 marks)

Algebra - Algebraic Fractions

Q1

(a) Show that the equation

$$\frac{5}{x+2} = \frac{4-3x}{x-1}$$

can be rearranged to give $3x^2 + 7x - 13 = 0$

$5(x-1) = (4-3x)(x+2)$

$5x - 5 = 4x - 3x^2 + 8 - 6x$

$5x - 5 - 4x + 3x^2 - 8 + 6x = 0$

$3x^2 + 7x - 13 = 0$

(3)

(b) Solve $3x^2 + 7x - 13 = 0$

Give your solutions correct to 2 decimal places.

for $ax^2 + bx + c = 0$ $\quad x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \dfrac{-7 \pm \sqrt{7^2 - 4 \times 3 \times (-13)}}{2 \times 3}$

$x = \dfrac{-7 \pm \sqrt{49 + 156}}{6} = \dfrac{-7 \pm \sqrt{205}}{6}$

$x =$ 1.22 or $x =$ −3.55

(3)

Q2

Simplify fully $\dfrac{x^2+x-6}{x^2-7x+10}$

x^2+x-6

$=(x-2)(x+3)$

$+1\ -6$
$-1\ +6$
$+2\ -3$
$-2\ +3$ ✓

$x^2-7x+10$

$=(x-2)(x-5)$

$+1\ +10$
$-1\ -10$
$+2\ +5$
$-2\ -5$ ✓

$$\frac{x^2+x-6}{x^2-7x+10}=\frac{\cancel{(x-2)}(x+3)}{\cancel{(x-2)}(x-5)}$$

$$=\frac{x+3}{x-5}$$

.....

(Total 3 marks)